

## **Sustainable Financing of Madagascar's Protected Area System: Progress and Future Priorities**

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### **Abstract**

By 2012, Madagascar's protected area system is expected to consist of over 100 parks and reserves covering at least 6 million hectares, and managed under a wide variety of governance structures, including most commonly, state-run or community co-management arrangements. Central to the successful development and management of this protected area system will be the establishment of long-term finance mechanisms. These mechanisms should reflect the needs of stakeholders from local to national levels, ensuring benefits for those involved in protected area (PA) management and provide sustainable prospects for PA funding. These mechanisms, at their core, must support the creation of the new PA system in Madagascar and ensure a flow of funds for management to the site level.

### **Introduction**

For over two decades, with dedication and foresight, those concerned with Madagascar's natural heritage, have been working on sustainable financing for conservation. The late 1980s and early 1990s saw the Government taking a significant and important step by enacting the National Environmental Action Policy (NEAP). A 15 year Environmental Program that is set to conclude in 2009, the NEAP seeks to ensure the conservation and rational use of the natural resources that underpin the Malagasy economy. Among the various achievements of the program has been the development of an effective protected area network managed by the country's national park authority (Madagascar National Parks, previously known as PNM-ANGAP). This network has been further complemented since President Marc Ravalomanana's pledge, at the 2003 World Parks Congress, that Madagascar would triple the surface area under IUCN recognized protection – largely through integrative community based conservation initiatives. As currently planned, the complete System of Protected Areas of Madagascar (SAPM) will comprise 50 parks and reserves managed by Madagascar National Parks and a further 50 to 60 terrestrial protected areas managed under the auspices of the Direction General de l'Environnement et Forêts (DGEF) through co-management arrangements integrating civil society groups, the private sector and local communities. Additional marine protected areas will be included within SAPM but planning for these is less well advanced than for terrestrial sites.

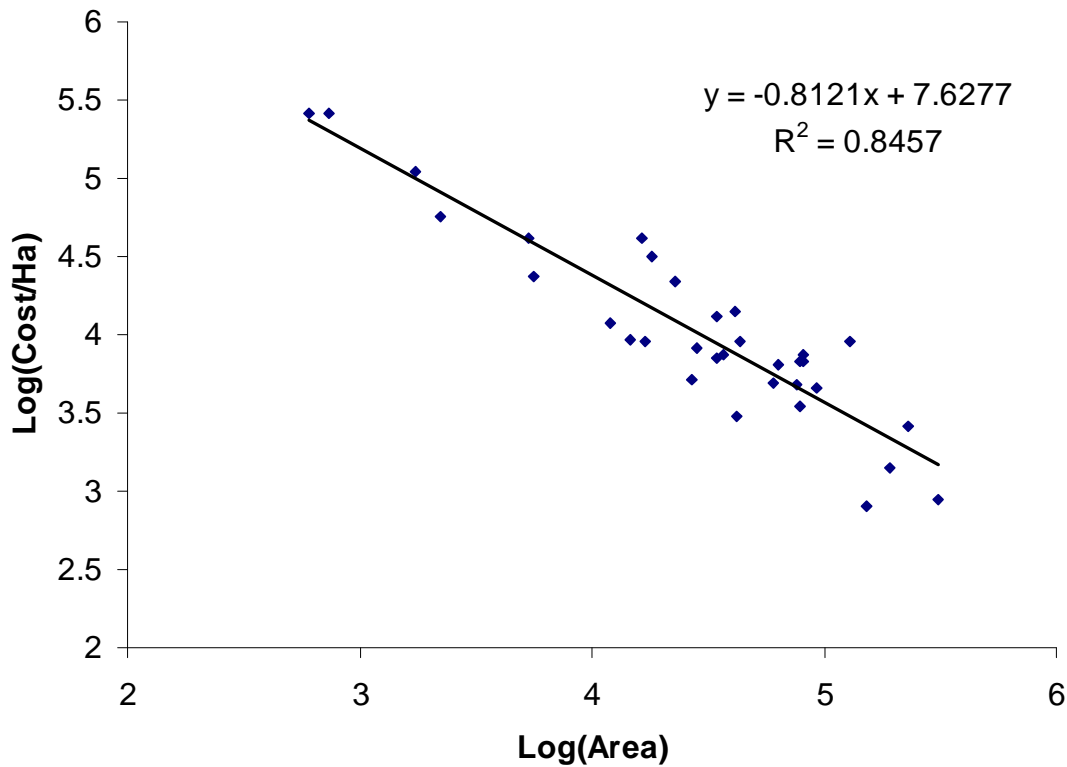
With the commitment to create a fully representative system of protected areas comes the need to identify and secure necessary financial resources, and this has set the bar for development of an appropriate suite of sustainable conservation financing mechanisms. In this article we will examine the approximate costs of the SAPM, review the progress made to date to develop long term financing mechanisms and suggest future priorities for further developing these mechanisms.

## **1. Estimating costs of protected areas**

To understand targets for sustainable financing, there first needs to be an assessment of costs of existing and planned protected areas. As the protected area system (SAPM) has evolved, there have been several attempts made at estimating the running costs. In preparation for the third phase of the environment program, Ramarolahy *et al.* (2001) reviewed the operational costs of protected areas managed by Madagascar National Parks and estimated an average cost of \$3 per hectare for the entire network. Meyers *et al.* (2004) used Madagascar National Parks's annual costs to develop a model that was used to predict costs of new predicted areas. Their model made several important assumptions and was used to provide costs under several scenarios. The key assumptions were: a) that many of the activities undertaken by Madagascar National Parks would not be included in the new protected areas; b) that the cost per hectare of a site varied in relation to the size of that site; and c) that the administrative costs of the new protected areas would be lower because no coordination structures equivalent of Madagascar National Parks's headquarters or provincial offices would be created. This modeling approach is powerful because it is based on real cost data for protected areas, it allows easy comparison of different assumptions related to SAPM and it provides costs for individual sites as well as the SAPM as a whole. In this paper we have used the same approach as Meyers *et al.* (2004) but we have updated the underlying assumptions and costing data based on the latest status of SAPM.

To estimate SAPM costs we used the actual 2007 costs of Madagascar National Parks's 22 protected area management units (these units can be responsible for several protected areas) and developed a model that predicts costs based on the size of the area. We first tested for a correlation between the size of Madagascar National Parks protected areas and their operational costs per hectare. The logarithms of these variables were strongly correlated ( $r= 0.72$ ,  $p<0.005$ ; see figure1) demonstrating that size of protected area accounted for 85% of the variability in per hectare management cost. The relationship between size and per hectare cost was therefore used as the model for predicting future annual costs of Madagascar National Parks protected areas. To estimate future Madagascar National Parks costs we included the 6 new protected areas currently being created by Madagascar National Parks, the extensions of existing parks and reserves that are currently planned and we assumed that the Madagascar National Parks parks where there is currently no management team would be managed in the future.

Figure 1. The relationship between cost per hectare and protected area size (in hectares) for the Madagascar National Parks protected area network. Based on 2007 financial data



To estimate the costs of the new SAPM protected areas that will be managed by entities other than Madagascar National Parks, we assumed that the costs of individual sites would be identical to those of Madagascar National Parks. Although many different protected area governance structures are proposed for the new protected areas within SAPM, we did not consider that they would be any cheaper or more expensive than the Madagascar National Parks model. More detailed analysis of the costs of different governance structures is in progress but for this study we made the simple assumption that Madagascar National Parks costs are a good proxy for the whole of SAPM. The final sites that will be included within SAPM are still the subject of a priority setting exercise (Razafimpahanana *et al.*, in preparation) and so we considered two potential scenarios: a) that the new protected areas outside of the Madagascar National Parks network include only the sites that already have provisional protection and the sites where promoting organizations are currently actively engaged in creating the protected area, and b) that all sites that have been identified as priorities to date are included within SAPM. These two scenarios provide a minimum and maximum estimation of the size of the final SAPM. We also included two scenarios related to the likely organizational structure needed to coordinate the SAPM: 1) we assumed that costs for coordination would be equivalent to those currently incurred by Madagascar National Parks for maintaining their 5 inter-

regional technical support offices (Directions Inter Regional) and 2) we assumed that the costs would be equivalent to Madagascar National Parks's costs of maintaining the inter-regional offices and a headquarters based in the capital.

### *Results*

The System of Protected Areas in Madagascar currently comprises approximately 2,119,181 hectares within the Madagascar National Parks protected area network (with planned extensions to 2,271,181 hectares), 2,791,726 hectares of new protected areas that have provisional protected area status and 254,227 hectares where site promoters are in the early stages of creating protected areas. An additional 1,338,818 hectares have been identified as priorities for protection by the Ministry of Environment, Forests and Tourism.

Table 1 provides the estimates for SAPM costs under the different scenarios based on the regression model. The 2007 costs of Madagascar National Parks were 9.4 billion Ariary (approximately \$5.9 million). The overall recurrent costs for the expanded and fully-managed Madagascar National Parks network are estimated at \$7.5 million per year, and the costs for the new protected areas outside of the Madagascar National Parks network range from \$5,230,555 and \$15,893,128 depending on the scenarios used. Hence the **annual recurrent costs of SAPM range from \$12.7 million to \$23.4 million** depending on the exact sites that are included and the size of any future centralized management structure to coordinate the system.

**Table 1. Estimations of costs for new protected areas.**

	Temporary protected areas and areas currently under creation	All potential protected areas
Without headquarters costs	\$5,230,555	\$11,268,718
Including headquarters costs	\$7,115,306	\$15,893,128

## **2. Mechanisms for Revenue Generation**

The Government of Madagascar and its technical partners have identified and begun to develop several mechanisms of revenue generation for protected areas. Within this spectrum of mechanisms there are some that are well established, and more traditional, such as the use of park entrance fees, and there are others that are experimental, and currently being piloted, such as marketing of forest carbon. In this section we review the principal mechanisms that have been considered in Madagascar and describe the progress towards developing them.

### **Malagasy Environmental Trust Funds**

Environmental Trust Funds are an important element of the long-term funding strategy for the environment in Madagascar and there currently two operational: the Tany Meva Foundation and the Foundation for Protected Areas and Biodiversity in Madagascar (FAPBM).

Tany Meva, founded in 1996, was created through a debt relief deal with the US government. It finances community level projects and activities on sustainable

community development that are intertwined with conservation and/or natural resource management. These projects are often, but not always, in areas surrounding protected areas. The capital fund is estimated at approximately \$12 million plus \$4 million managed as sinking funds (\$5 million in US dollars and the equivalent of \$11 million in local currency). Tany Meva distributes approximately \$500,000 in grants annually for conservation and sustainable rural development projects.

The Madagascar Foundation for Protected Areas and Biodiversity, founded in 2005, funds protected area management, and is currently in the process of identifying the priority sites for which it will provide funding. The foundation manages an endowment fund, which is projected to attain its target of a \$50 million capital by the end of 2009, as well as sinking funds. Contributions or firm commitments for the foundation's capital have been received from the Government of Madagascar, AfD, Conservation International, FFEM, KfW, WWF, and the World Bank (IDA). The goal is to obtain \$2.5-3 million in interest annually from the capital fund that can be used to fund protected areas. In addition to the capital fund, sinking funds are currently used to finance parks and activities according to specific donor objectives.

The two foundations provide secure, transparent funding through the interest raised from the capital of their respective trust funds. However they also act as a transparent mechanism through which international donors can disburse funds that can be managed as sinking funds. For example, some KfW funding dedicated to the National Parks is currently managed through a sinking fund at the Foundation of Protected Areas and Biodiversity of Madagascar. The FAPBM, in particular, is likely to play an increasing role as a conduit for funding from international donors as well as some of the other sustainable financing mechanisms described below. Another advantage of funding passing through the FAPBM that cannot be understated is the application of uniform administrative procedures at the protected area level; the use of different procedures for each donor has been one of the biggest sources of inefficiency in protected areas management during the NEAP.

#### ***Traditional Donors and Non Governmental Organizations (NGOs)***

Financial support from traditional donors has provided, and continues to provide, the core resources for implementation of environmental policy and initiatives in Madagascar. In the first five years of the NEAP, international funding institutions committed over \$160 million. Specifically with respect to financing protected areas, the World Bank, KfW, USAID and the conservation NGOs currently provide most of the funding. We estimate this combined support at over \$10 million per year (Madagascar National Parks data, 2007a; Conservation International data, 2008; Scholfield and Brockington, 2008).

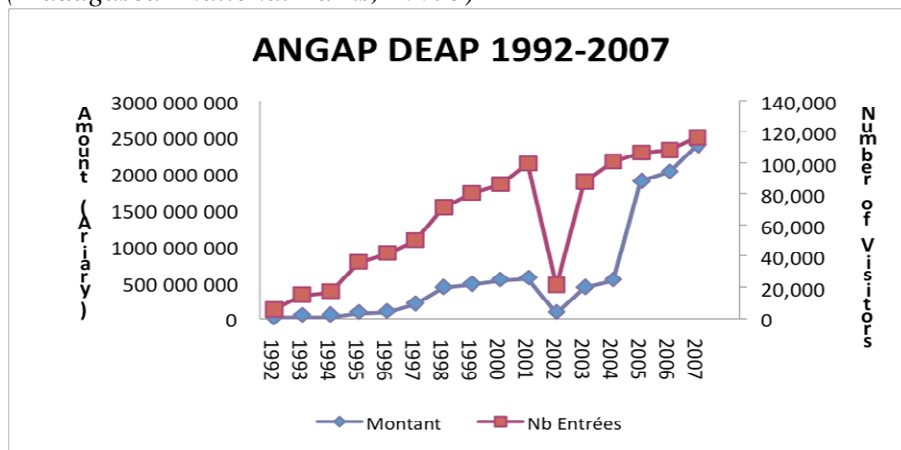
#### ***Protected Area Entrance and other user fees***

The best known source of sustainable financing for protected areas is entrance fees. In Madagascar, entrance fees are currently paid by visitors, researchers and film crews at all Madagascar National Parks-managed parks and reserves and this generates just over \$1 million per year (Madagascar National Parks data, 2007b). Half of these revenues are used to fund community projects at the sites where they are collected and the other 50% contributes towards management costs of the Madagascar National Parks network in general. Madagascar National Parks has also developed some other visitor-related

revenues such as camping or accommodation fees and some souvenir sales, but in general this potential source of revenues has not been developed. The 50% of entrance fees and other visitor-related revenues is Madagascar National Parks's only source of unrestricted, flexible funding since donor-funding tends to be for specific activities at specific sites.

Visitor numbers have been increasing since the records began in 1992, with the exception of the dip in 2002 due to political instability within the country, but the increase has slowed in the last few years both for the whole network and for some individual sites, probably due to saturation of existing hotel capacity during peak periods (see Figure 2)., Madagascar National Parks reviews the entrance fees periodically and in December 2003 they were adjusted to the equivalent of approximately \$20/day based on a visitor willingness to pay study. This change resulted in a substantial increase in the revenues generated in 2004 (see Figure 2). Park entrance fees are a common mechanism for supporting protected areas around the world and the rates charged in Madagascar are comparable to other countries (Reed, 2008).

**Figure 2.** Visitors and Entrance Fee Revenues from National Parks (1992-2007). *Source: (Madagascar National Parks, 2007b)*



### Ecotourism Concessions

Since 2006 various partners (Madagascar National Parks, National Office of Tourism, USAID, WCS, CI, IFC and PIC) have supported the Ministry of the Environment, Forests and Tourism to develop an ecotourism concessions policy and attract high quality ecotourism investment within protected areas. On the January 18, 2008, the Government Cabinet approved the implementation of ecotourism concessions as a mechanism for revenue-generation in protected areas. The goal of the concession policy is to attract high-quality national and international investors to build and manage first-class eco-friendly facilities in selected protected areas over an extended period. These operations will contribute to park financing through concession fees as well as bringing additional benefits such as promotion of Madagascar as a tourism destination, job creation and potentially the direct involvement of ecotourism companies in development projects in communities adjacent to parks.

Three equally-important types of investors are being targeted in Madagascar: international high-end, low-volume ecotourism operators; international high-end,

medium-volume hotel operators and local “best-of-range” small and medium hotel operators. Detailed estimates of concession revenues will be dependent on the specifics of each concession location, but rough estimates of concession revenues from the first type of operator could yield US \$ 100,000 per annum per concession in the first four years, to increase to US \$ 200,000 in the fifth year, when a break even point on investment is reached.

The initial concessions are being promoted in the Madagascar National Parks’ network but the new protected areas also provide many opportunities for the future. To date the legal and regulatory framework (model concession contract with environmental and social specifications) has been completed. Although no contracts have been signed investment as of November 2008, several interested investors in the high end category have made reconnaissance trips to the initial priority protected areas (Sahamalaza, Ankarana/Montagne d’Ambre, Masoala/Nosy Mangabe, Mananara/Nosy Atafana, Mantadia/Andasibe,) and the proposed concession zones within them.

### **Debt Reduction**

Debt reduction has been part of the overall financing agenda in Madagascar for over twenty years and has led to an injection of funds into the conservation program. Over \$11 million has been secured from “debt-for-nature” swaps for protected area financing during the 1990s (Moye and Paddack, 2003). More recently, at the Millennium Summit in Gleneagles in 2005, all of Madagascar’s institutional debt (owed to the World Bank, IMF and African Development Fund) was cancelled under the Highly Indebted Poor Country. In 2005, the President of the Republic announced at the United Nations that 8% of this cancelled debt would be invested in protected area creation. In addition, some debt for nature arrangements are negotiated bilaterally. For example the governments of France and Madagascar agreed to two separate negotiations as part of France’s *Contrat Désendettment Développement* (C2D) agreement, an HIPC initiative. The second agreement, signed June 11, 2008 specified that 50 % of approximately 26 million Euros will be dedicated to the environment, through contributions by the Malagasy government to the capital fund of the Foundation for Protected Areas and Biodiversity. Debt reduction agreements clearly represent an important potential source of funding for environmental protection activities, and when linked with foundations they can provide capital to ensure the availability of funding in perpetuity.

### **Green Charges/Fees**

Here we refer to “green fees” as charges for services for which the revenues are used to fund environmental protection activities. In Madagascar, the park entrance fees are an existing example of green fees. Several studies have been carried out regarding the feasibility of implementing other green charges. One option that has demonstrated significant promise in the case of Madagascar, and has been identified by the Government of Madagascar as a priority for implementation, is an air transportation surcharge. Over 50% of tourists coming to Madagascar cite the country’s Nature as the main attraction that brought them to the country (World Bank, 2003) and this surcharge would capitalize on that strong link between tourism and the country’s natural resources. Two studies have examined the feasibility of a surcharge on air transportation and work

is currently being carried out in collaboration with the tourism sector to identify the specifics of how such a fee could be implemented (Hecht, 2006; 2008).

### **Biodiversity Offsets**

Biodiversity offsets are conservation activities that are implemented or funded by developers of infrastructure projects that will have negative impacts on the environment. The concept is that in addition to the standard environmental impact mitigation measures that an infrastructure project would undertake, additional offsets are identified so that the project can be considered to have a net positive impact on biodiversity conservation. Two mining companies in Madagascar have indicated an interest in supporting biodiversity conservation through biodiversity offsets: the QMM (a subsidiary of Rio Tinto) illmenite mine near Tolagnaro and the Ambatovy nickel/cobalt mine project (a Malagasy company of which Sherritt is the majority shareholder) near Moramanga.

The Business Biodiversity Offsets Program (BBOP), developed by a consortia of environmental NGOs and companies with support from USAID, is a methodology that has been developed to identify appropriate offsets for a project based on the projected impacts. Under the auspices of BBOP, projects are intended to go above and beyond an Environmental Impact Assessment (EIA). The projects in Madagascar have the potential to become global examples of good practice in implementing biodiversity offsets but as of November 2008, neither has made significant advances in implementing offset activities. In both cases the companies involved have indicated that contributing to the funding of protected areas in regional vicinity of their mining operations would be a potential offset.

### **Payments for Ecosystem Services (PES)**

Carbon sequestration is undoubtedly the current front-runner in terms of payments for ecosystem services and in Madagascar several forest carbon projects have been developed that tap into the emerging carbon markets. These projects are described in the next section. Several studies have been carried out and are ongoing regarding the potential payment for ecosystem services other than carbon sequestration, in particular there is a focus on the potential for watershed related payments. However, to date these studies have been limited to valuation studies rather than feasibility studies for implementing payment schemes.

Through the MIARO project, USAID supported a valuation study of the Makira-Masoala Landscape. This study of one of the largest forest landscapes of Madagascar, identified watershed services as the service most highly valued by local stakeholders, and it estimated the total value of all the services provided in the landscape as \$ 3 billion annually (Masozera, 2008). However one of the few feasibility studies for implementing a PES scheme also focused on this landscape and showed that the willingness to pay by downstream water users was very low because of a perception that communities living upstream who would be the beneficiaries of such a scheme already had higher annual revenues (IRG, 2002). Other regional valuation studies of water services have been undertaken in the region of Fianarantsoa and Montagne d'Ambre (Carret, 2003).

In addition to regionally specific studies, there has been an effort to link Madagascar into global initiatives through participation in regional conferences such as the regional African Katoomba meetings.



The case for PES schemes seems to be high in Madagascar. The use of natural resources directly benefits many users from rural to urban areas, commercial enterprise to household levels and in a very direct way. The on-going work in Madagascar should not only seek to better understand the services that are provided and how they may be tied into markets but to define a national vision of how ecosystem services can tie into development programs. Defining a national strategy, with a permanent working committee, will be crucial to valuing, and eventually conserving, the natural resources that are critical to sustained livelihoods.

### **Markets for Forest Carbon Projects**

Sequestration of 'forest' carbon and sale of sequestered carbon from afforestation or reforestation projects, or from avoided emissions from projects that Reduce Emissions from Deforestation and Degradation (REDD) has become a viable financing mechanism for conservation activities. Madagascar is poised to participate in both the official Clean Development Mechanism and the voluntary carbon markets, with potential annual revenues calculated in the tens of millions of dollars.

The two most advanced of the REDD projects are the Makira Protected Area and the Ankeniheny-Zahamena corridor (CAZ). In both cases, these projects are estimated to generate 9-10 million tons of Emission Reductions (1ER is equivalent to 1 ton of carbon dioxide) over the next 30 years. The Makira project has already received funding from voluntary markets for the equivalent of 40,000 tons of ERs valued at US\$200,000.. The Government of Madagascar has signed an agreement with the World Bank's BioCarbon Fund that will provide approximately \$1.5 million towards the management of the protected area. An additional new REDD project has been initiated to protect the Fandriana-Vondrozo forest corridor.

Two projects focus on developing methodologies for future REDD implementation. The GTZ/Intercooperation's FORECA project (FORêts Engagés comme réservoirs de Carbone) aims to develop a methodology that could be used for REDD projects if they become eligible under the post-Kyoto UNFCCC framework (to come into force after 2012). A project financed by Air France through GoodPlanet and implemented by WWF is also working on developing improved methodologies for estimating carbon stocks in forest and will also contribute directly towards the protection of 500,000 hectares of natural forest in a variety of sites throughout the country.

Several afforestation and reforestation projects are underway in Madagascar. One of these, the restoration of a forest corridor between Mantadia and Maromihza (within the greater Ankeniheny-Zahamena corridor) has been designed to be eligible under the clean Development Mechanism rules. The project, led by MEFT and supported by Conservation International and the World Bank aims to restore 3,020 hectares of natural forests and to improve agricultural practices in the surrounding landscape. A contract has been signed between MEFT and the BioCarbon fund that will provide US\$800,000 towards the implementation of this restoration project. This is one of only a few examples around the world of a project that is trying to restore natural habitats using funding from carbon markets.

Madagascar is one of the countries that is the most advanced at implementing carbon projects and these experiences are an important part of informing international policy on the role of forest carbon projects in international climate change policy. The Madagascar

Government, MEFT, and partner organizations are therefore taking an active part in participating in international climate change meetings such as the UN Framework on Climate Change Convention (UNFCCC) conferences. In addition MEFT and its partners are developing a national strategy for REDD and have received funding from the Forest Carbon Partnership Facility to help in its development.

## **Results**

### **Sustainable Conservation Financing Survey**

In an effort to gain a better understanding of the perceptions and opportunities for sustainable financing for Madagascar a survey was distributed to members of the conservation and development community in Madagascar. Those asked to respond work as members of State entities, Donors, International NGOs, National NGOs and Associations as well as from the private sector. The survey was distributed electronically to recipients, identified by the authors as representative of the various organizations active with Madagascar, by email with links to an electronic online survey ([www.surveymonkey.com](http://www.surveymonkey.com)) for analysis. The survey consisted of a series of ten questions aimed at assessing respondents' opinions of the highest priorities for further development of finance mechanisms for protected areas.

Questions included in the survey:

1. Which of the following Protected Area Networks are funding priorities in Madagascar?
2. How familiar are you with the following revenue generating mechanisms in Madagascar?
3. In the context of Madagascar how much annual income do you think can be generated (USD \$)?
4. In the context of Madagascar how politically acceptable do you think each mechanism is?
5. In the context of Madagascar with how easily can revenue from each mechanism flow to the local / site level?
6. In the context of Madagascar to what extent could each mechanism be scaled-up?
7. In the context of Madagascar how easy to implement is each mechanism?
8. In the case of Madagascar what conditions allow for the optimal implementation of mechanisms to fund Protected Areas?
9. In the case of Madagascar what conditions allow for the optimal flow of benefits to local /site level?
10. Based on your answer above which mechanisms do you feel are priorities in Madagascar?

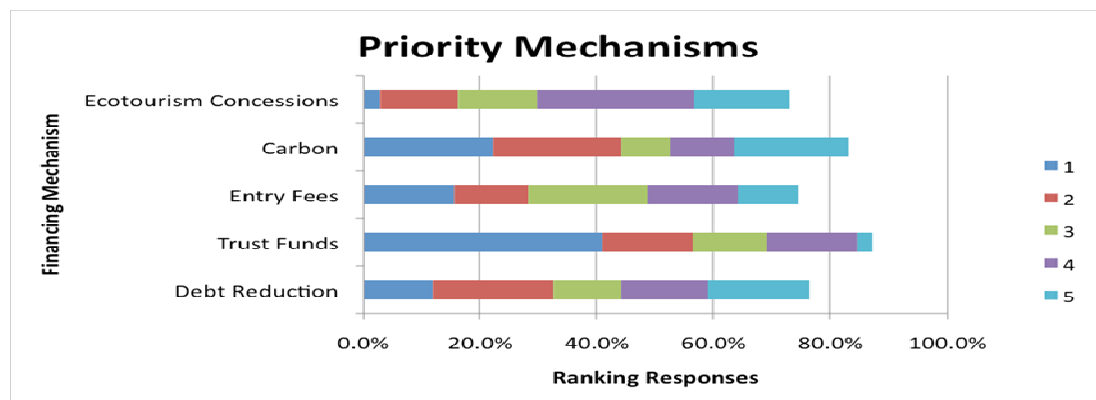
The following answers are based on the views and feedback from approximately 40 respondents.

The majority of respondents were from International NGOs (43%, with national NGOs and Associations comprising the second largest group of respondents with 28%). The table below gives the results from the questionnaire based on the numerical value (1-5) that was the most common response given. The results are intended to give an indicative idea of the different financing mechanisms in Madagascar in relation to one another. The total score at the end is again just to give an indicative relation for the different mechanisms.

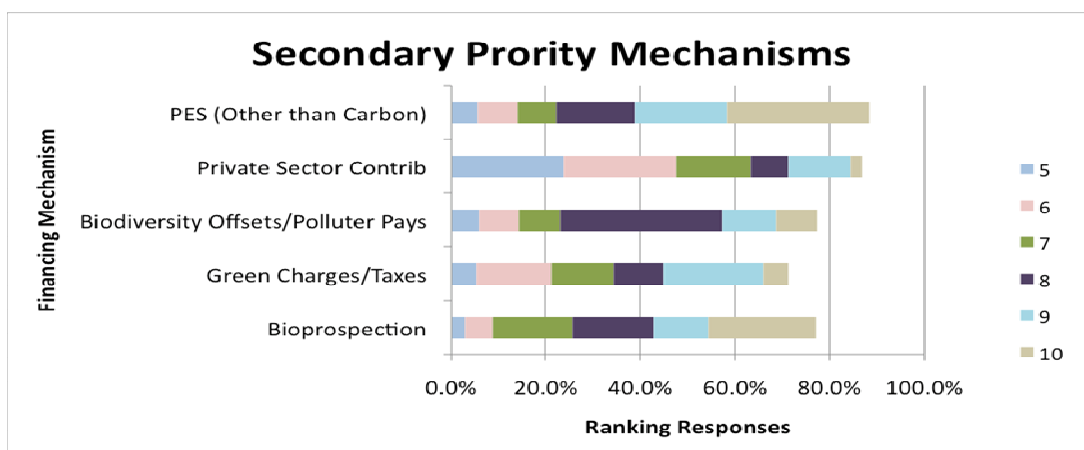
**Table 2. Survey Results**

Mechanism	Question	Familiarity w/ Mechanism	Political Acceptability	Ease of Distribution to Sites	Ease of Scaling-Up	Ease of Putting in Place	Total
Trust Funds		<b>5</b>	<b>5</b>	3	3	3	<b>19</b>
Entry Fees		<b>5</b>	<b>5</b>	<b>4</b>	<b>5</b>	<b>5</b>	<b>24</b>
Ecotourism Concessions		4	4.5	3	3	2	16.5
Debt Reduction		<b>5</b>	<b>5</b>	3	2.5	3	<b>18.5</b>
Green Fees/Taxes		3	3	3.5	2	3	14.5
Bio-prospection		2	3	3	2	3	13
Biodiversity Offset/ Polluter Pays		2	3.5	3	2	2	12.5
Private Sector Contributions		3.5	3	3	3	3	15.5
Payments for Ecosystem Services (PES)		4	3	3	2	2	14
Carbon Sequestration		4	<b>5</b>	3	4	4	<b>20</b>

Responses were given on a scale from 1 to 5 “Familiarity” and “Political Acceptability” were ranked on a basis of 1 being least familiar or least politically acceptable and 5 being most familiar. For ease of “Distribution to sites “Scaling-up” and “Putting in Place” 1 represents most difficult and 5 easiest. The “Total” score is to give a comparative score. The scores are rather to relate the different mechanisms to one another in the case of Madagascar.

**Question 10A-Priorities**

From these survey results, four mechanisms fall out as being highest in overall rank: debt reduction, trust funds, protected area entry fees and carbon sequestration. These are also the mechanisms that have thus far contributed the most funds to Madagascar’s efforts to ensure conservation and sustainable land use. These mechanisms were also commonly ranked by respondents as easy to put in place and were the mechanisms respondents were reportedly most familiar with. All four of the mechanisms also were ranked highest in terms of political acceptability. These findings seemingly reflect the fact that those mechanisms that have been put in place Madagascar are the ones that respondents felt held most promise and importance in terms of revenue generation. When assessing the ease of distribution to the local level only protected area entry fees and carbon sequestration, that currently have explicit policies of distributing funds to the local level, were ranked as being somewhat more easily distributed to the local level than the other mechanisms. Ecotourism concessions, also a mechanism that has undergone significant work is ranked among the most important mechanisms within Madagascar.



**Question 10B- Priorities** Private sector contributions, biodiversity offsets/polluter pays, green surcharge/tax, payments for ecosystem services and bio-prospection all received rankings of or lower than 5.

In considering potential revenue generation from the various mechanisms, the survey results indicate a range of total revenue between 13 and 28 Million per year: the lowest and the highest ranges for each mechanism being considered. This can be considered as cautiously optimistic in that if all mechanisms were implemented in some form there would be a significant contribution to the calculated financial gaps in protected area establishment and maintenance. What seems to stand out is that there is potential for funding protected areas but it depends on a wide range of mechanisms. There has been some relative degree of success in implementing financing mechanisms but it will take a broader platter of funding streams to ensure the long-term financial sustainability of protected areas.

**Table Potential Annual Revenue Flow from Selected Financing Mechanisms**

Mechanism	Estimated Annual Potential Revenue (2009-2012)
Debt Reductions	2-5 Million
Entry Fees	5+ Million
Carbon Markets / REDD	0-1 Million
Green surcharges / Fees	1-2 Million
Malagasy Environmental Trust Funds	2-5 Million
Tourism Concessions	0-1 Million
Biodiversity Offsets	2-5 Million
Payments for Ecosystem Services (PES)	0-1 Million
Bio-prospection	1-2 Million
Private Sector	0-1 Million
<b>Total</b>	<b>13-28 Million per Year</b>

Most respondents, however, were not able to estimate potential revenue for Biodiversity offsets, tourism concessions, private sector contributions and bio-prospection. For these mechanisms, the next most commonly provide response category was used.

## Conclusions

The issue of funds management and equitable funds distribution to the site level is central to the process of identifying finance mechanisms that, once in place, can significantly contribute to – if not ensure – the Madagascar’s environment and sustainable resource initiatives. In this section we consider two systems through which generated revenue can

flow to the site level: distribution of park entrance fees revenue, distribution of generated revenue through foundation. These two systems have been either in place for some time – park entrance fees, or are currently being piloted as national strategy for sustainable finance develops – foundation based management, and represent the mechanisms most commonly recognized by survey respondents. It is important to note that this section will focus on the mechanisms through which these distribution systems can function, and less on the evaluation of benefits from this distribution. This latter subject is covered in another chapter within this monograph.

Entry fees for National Parks are an important source of revenue for the network of Protected Areas managed by Madagascar National Parks. The money collected from the sale of Entrance Tickets is split equally in two parts: one for management of Madagascar National Parks network and; two for the financing of activities that reduce pressure on the Park (ie activities in communities around parks). Identification of appropriate activities is left to a committee known as COSAP composed of members from communities surrounding parks, civil society and local authorities. Furthermore activities must be part of a Communal Development Plan (*PCD-Plan Communal de Développement*).

The usage Entrance Fees takes several issues into account a general usage policy, community projects and the policy of Madagascar National Parks (National Parks of Madagascar-National Association of Protected Area Management). The general policy dictates the amount that is destined for communities, in the case of Entry Fees 50 percent. The financing of community projects was set forth by the Director General of Madagascar National Parks and follows several guiding principles 5% goes directly to the budget of communities, 5% goes directly to the region for monitoring and evaluation of the projects, funds allocated to communities are reserved exclusively for communities directly bordering a National Park, the projects must engage the protection of the Park while stimulating development of benefits of the community, funds are allocated based on the judgment of COSAP and the proposal filed by concerned parties and the money is deposited in a bank account in the name of the Park “population” and is managed by the Inter-Regional Director of Madagascar National Parks.

The principle of transparency is an essential tenet of the management of the funds disbursed for community projects. An accounting of the funds is available upon request, and all projects that are financed are listed in the Park Offices with the conditions, as are the projects that are not accepted by COSAP with the reasons clearly stated. Managers of Madagascar National Parks and the community concerned with protected areas in Madagascar has recognized the vital importance of communities in the management of National Parks and PAs. Investing Entrance Fee revenues in the development of communities surrounding Parks is an effort to deal with the challenges that rural communities face in terms of finding meeting alimentary needs. Cooperation with communities is viewed as an intrinsic element of successful sustainable park management. The Policy for use of Madagascar National Parks funds is also stringently defined within Madagascar National Parks itself and involve investment as well as operational costs.

With strong commitments to reduce deforestation and conserve key forest areas in the country, Madagascar is well placed to generate CO2 emissions reductions for sale in the carbon markets. While we explore the possibilities of managing revenue generated from

such carbon sales through foundation(s), it is worth noting that the structure could be the same for revenue generated from PES, biodiversity offsets, or other such mechanisms.

In considering the example of forest carbon, income opportunities will exist from the sale of emission reductions that have already been generated (ex post sales), and from future sales (ex ante sales). Ex post sales of emission reductions would take place on an annual basis (giving rise to the concept of yearly vintages), after verification that these reductions have in fact been generated as a result of reduced rates of deforestation. The sales will result in an annual cash flow that would be targeted directly to meet conservation and rural development funding needs at the site level.

Future, or ex ante, sales could result in a large single, lump-sum payment that creates an opportunity to manage those funds for long-term income potential. Under that scenario, the lump-sum amount could be invested to generate a long term sustainable funding stream to support sustainable livelihood investments in communities and effective forest management. If amount of the payment from ex-ante sales is large enough, the income from investment could be sufficient to meet identified needs. Generating sufficient revenue to provide necessary protection and management as well as support community management and development efforts is a key element of project risk management. Properly managed funds generated from ex post or ex ante sales will assure provision of emission reductions sold on the market.

The question is how best to manage funds that are generated from the sale of CO<sub>2</sub> emission reductions, and ensure that these funds are used for the stated purpose. The use of a funding mechanism that is independent of Government but works closely with Government to ensure the use of funds is consistent with national objectives provides the ideal option. A Foundation, or similar funding mechanism, offers the opportunity for investing in international markets and allows greater control over the allocation of funds to a particular site. Allocation of funds back to the sites that generated those funds represents a key concern for buyers, who want assurances against the risk of deforestation, and any loss of the carbon asset. Providing these assurances through investment in management and the local economy creates opportunities to market and complete forward sales.

Following this, several scenarios might be considered for the management of funds generated from the sale of CO<sub>2</sub> emission reductions through foundation(s). Madagascar has two operational foundations that manage endowments and provide grants for protected area management and community development based on sustainable use of natural resources. Channeling funds generated from the sale of CO<sub>2</sub> emission reductions through either or both of these foundations deserves serious consideration. One option would be, following an ex ante sale, a large single payment would be added to the capital of the Foundation (if an endowment) and generate revenue from the return on investment. Where payments from annual sales are generated – ex post sales, the Foundation could create a “sinking fund” – a special account to manage the revenue generated. In either case the funds would be managed and accounted for separately through a specified funding window to support the specific site from which the sale of CO<sub>2</sub> emission reductions occurs.

There are many benefits of working through either one or both existing foundation. One benefit is the avoided cost of establishing a new institution. Creating a new foundation, hiring staff and developing the capacity of the institution involves

significant costs. Estimates place the cost at over \$200,000 for the entire process. Another benefit to working through existing foundations is the lower administrative cost. A new foundation will need a staff and will have greater overhead per revenue than if funds were channeled into an existing institution. The result is more money going to investments in the protected area and the communities. A third benefit is the existing foundation's experience in managing funds and making grants, and the flexibility of using an existing investment account located overseas to receive deposits from the CO2 emission reductions sales.

The existing foundations also have required flexibility in managing funds. Each of the existing Malagasy foundations has the capability of creating funding windows. In the foundation, a funding window would be created for a specific site/protected area, and all funds generated from the sale of carbon would be managed through that window. This does not mean that the funds would be invested separately, only that the funds that pertain to the site would be managed and accounted for separately to ensure the required allocations to the project.

The use of funding windows would involve the creation of a special committee that would guide the management of funds for said window. The special committee would be structured to include involvement of Government, NGOs, the Foundation, etc. The committee, not the Foundation alone, would make decisions regarding the management of finances of the specific window, and the Foundation would then execute those decisions.

Significant investment of money and human resources has gone into the creation of the two existing foundations in Madagascar, both of which have strong management and investment experience. Using the existing foundations and creating funding windows within either or both of them would allow establishment of viable financing mechanism immediately and allow the revenue from to be channeled for conservation and development as quickly as possible.

The extraordinary biodiversity of Madagascar is an asset to the world and equally to the population of Madagascar. The tremendous challenge set forth by the President of the Republic of Madagascar to triple the size of area covered by protected areas represents a tremendous commitment to conservation and at the same time represents an enormous task for creation, management and funding. Sustainably financing protected areas has been considered in the planning process in Madagascar and must be considered a critical part of ensuring the success of protected areas.

The need to meet the gaps in funding for protected areas in Madagascar is well understood, costing efforts have given some indications of the gap and an on-going process to refine the costs continues to give a more precise idea of what is needed. The financing challenge is being taken on through a variety of creative strategies and there has already been demonstrated success in several cases, and there seems to be potential for scaling up and implementation of a wide variety of financing mechanisms. In the face of the different financing opportunities it remains an imperative that financing transfers to the site level. Funding for protected areas must reach the protected area.